



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/751,017  | 12/31/2003  | Ambuj Shatdal        | 11087 (NCR.0119US)  | 3663             |
| 26890   | 7590        | 04/01/2008           | EXAMINER            |                  |
| JAMES M. STOVER<br>TERADATA CORPORATION<br>2835 MIAMI VILLAGE DRIVE<br>MIAMISBURG, OH 45342 |             |                      | FLEURANTIN, JEAN B  |                  |
|   |             | ART UNIT             | PAPER NUMBER        |                  |
|   |             | 2162                 |                     |                  |
|   |             | MAIL DATE            | DELIVERY MODE       |                  |
|   |             | 04/01/2008           | PAPER               |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/751,017

Filing Date: December 31, 2003

Appellant(s): SHATDAL, AMBUJ

---

Dan C. Hu  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed January 14, 2008 appealing from the Office action mailed December 15, 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is substantially correct, except, claims 12-14 are rejected as described in section 6 of this Examiner Answer and subject to this appeal.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

Art Unit: 2162

**(6) Grounds of Rejection to be Reviewed on Appeal**

Claims 1-3, 8-11 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,713,020 issued to Reiter et al., ("Reiter") in view of applicant background, specification pages 2-4, up to paragraph [0009] ("APA").

**NEW GROUND(S) OF REJECTION**

Claims 8-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,713,020

Reiter et al.

1-1998

APA, admitted prior art, specification pages 2-4, up to paragraph [0009].

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

## NEW GROUND(S) OF REJECTION

### *Claim Rejections - 35 USC § 101*

#### **35 U.S.C. 101 reads as follows:**

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 8-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

#### **As set forth in MPEP 2106:**

As per independent claims 8 and 12

The independent claims 8 and 12 are directed to an “article” and “storage medium”, in which computing intermediate values for storage in an intermediate pool. The claimed steps are not being performed by any form of computer hardware component. The claimed, “article” and “storage medium” fail to fall with one of four statutory categories of invention, process, machine, manufacture and composition, and is software per se.

Moreover, applicant specification, describes “storage medium” as a software component, in paragraph [0046], and a “carrier waves”, in paragraph [0048].

The dependent claims are rejected under the same rational.

Art Unit: 2162

As per independent claim 15

The independent claim 15 is directed to a “*database system*”, in which computing intermediate values for storage in an intermediate pool. The claimed steps are not being performed by any form of computer hardware component. The claimed, “*database system*” fails to fall with one of four statutory categories of invention, process, machine, manufacture and composition, and is software per se.

Moreover, applicant specification, describes “*database system*” as a software component, in paragraph [0046], and a “*carrier waves*”, in paragraph [0048].

The dependent claims are rejected under the same rational.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8-11 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,713,020 issued to Reiter et al., (“Reiter”) in view of applicant background, specification pages 2-4, up to paragraph [0009] (“APA”).

Art Unit: 2162

As per claim 1, Reiter discloses "a method executable by at least one processor in a database system" (i.e., method for processing database queries; see col. 2, lines 40-41), comprising:

"receiving, by at least one processor, a query that specifies an aggregate on distinct values of at least one attribute" (i.e., receiving a query producing a multi level aggregation table set; col. 4, lines 34-37), "the query further specifying grouping on plural grouping sets" (i.e., query containing a sum of order amount for all rows (sets); see col. 5, lines 23-25), "the plural grouping sets having at least a first grouping set" (i.e., grouping (aggregating) column; col. 5, lines 30-31) and "a second grouping set" (i.e., grouping (aggregating) rows; col. 5, line 37);

"identifying, by at least one processor, distinct values of the at least one attribute" (i.e., each distinct value in the designated row; col. 9, lines 15-18) and

"computing, by at least one processor, aggregates for groups specified by the first grouping set using the first table" (i.e., performing some operation on the values of rows in the source table; col. 2, lines 24-25); and

"computing, by at least one processor, aggregates for groups specified by the second grouping set using the first table" (i.e., aggregating of all of the rows of the source table; see col. 5, lines 36-37).

Reiter fails to explicitly disclose storing the distinct values of the at least one attribute in a first table. However, APA discloses a method for storing the distinct values of the at least one attribute in a first table (see APA page 3, paragraph [0006], line 1). It would have been obvious to a person of ordinary skill in the art at the time the invention

Art Unit: 2162

was made to modify the method of Reiter by storing the distinct values of the at least one attribute in a first table as disclosed by APA (see APA, page 3, paragraph [0006], line 1). Such a modification would allow the method of Reiter to provide table sets in response to a multiple level aggregation query (see Reiter col. 2, lines 60-62), therefore, improving the accuracy of the computing aggregates on distinct attribute values.

As per claim 2, in addition to claim 1, Reiter further discloses "the grouping set is lower grouping set than the second grouping set" (i.e., higher level aggregation rows (321-323) and lower level aggregation rows (331-333); see col. 5, lines 59-67), "and wherein the first grouping set has a larger number of attributes than the second grouping set" (i.e., grouping column specifying level two; see col. 6, lines 65-67).

As per claim 3, in addition to claim 1, Reiter further discloses "computing a group-by operation on the first grouping set" (i.e., group-by operation; see table 2, lines 6-7) and "selecting the attributes of the first grouping set for output" (i.e., selecting sum or category; see table 2, lines 1-4).

As per claim 8, Reiter discloses "an article comprising at least one storage medium containing instructions that when executed cause a system to" (i.e., memory comprising an engine, executing (processing instructions) on the cpu as do the programs; see col. 4, lines 22-26 and Fig. 1), comprising:

Art Unit: 2162

"receiving a query that specifies an aggregate on distinct values of at least one attribute" (i.e., receiving a query producing a multi level aggregation table set; col. 4, lines 34-37), "the query further specifying grouping on plural grouping sets" (i.e., query containing a sum of order amount for all rows (sets); see col. 5, lines 23-25), "the plural grouping sets having at least a first grouping set" (i.e., grouping (aggregating) column; col. 5, lines 30-31) and "a second grouping set" (i.e., grouping (aggregating) rows; col. 5, line 37);

"identifying distinct values of the at least one attribute" (i.e., each distinct value in the designated row; col. 9, lines 15-18) and "computing aggregates for groups specified by the first grouping set using the first table" (i.e., performing some operation on the values of rows in the source table; col. 2, lines 24-25); and "computing aggregates for groups specified by the second grouping set using the first table" (i.e., aggregating of all of the rows of the source table; see col. 5, lines 36-37).

Reiter fails to explicitly disclose steps for storing the distinct values of the at least one attribute in a first table. However, APA discloses steps for storing the distinct values of the at least one attribute in a first table (see APA page 3, paragraph [0006], line 1).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the teachings of Reiter by incorporating steps for storing the distinct values of the at least one attribute in a first table as disclosed by APA (see APA, page 3, paragraph [0006], line 1). Such a modification would allow the method of Reiter to provide table sets in response to a multiple level aggregation query (see Reiter

Art Unit: 2162

col. 2, lines 60-62), therefore, improving the accuracy of the computing aggregates on distinct attribute values.

As per claim 9, in addition to claim 8, Reiter discloses "the grouping set is lower grouping set than the second grouping set" (i.e., higher level aggregation rows (321-323) and lower level aggregation rows (331-333); see col. 5, lines 59-67), "and wherein the first grouping set has a larger number of attributes than the second grouping set" (i.e., grouping column specifying level two; see col. 6, lines 65-67).

As per claim 10, in addition to claim 1, Reiter further discloses "computing a group-by operation on the first grouping set" (i.e., group-by operation; see table 2, lines 6-7) and "selecting the attributes of the first grouping set for output" (i.e., selecting sum or category; see table 2, lines 1-4).

As per claim 11, in addition to claim 1, Reiter fails to explicitly disclose storing the distinct values of the at least one attribute in a spool (table). However, APA discloses a method for storing the distinct values of the at least one attribute in a spool (table) (see APA page 3, paragraph [0006], lines 1-2).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Reiter by storing the distinct values of the at least one attribute in a spool (table) as disclosed by APA (see APA, page 3, paragraph [0006], lines 1-2). Such a modification would allow the method of Reiter to

Art Unit: 2162

provide table sets in response to a multiple level aggregation query (see Reiter col. 2, lines 60-62), therefore, improving the accuracy of the computing aggregates on distinct attribute values.

As per claim 15, Reiter discloses "a database system" (see col. 2, lines 53-54) comprising:

"at least one processor to" (i.e., cpu; see col. 4, line 25):

"receive a query that specifies a calculation of an aggregate on distinct values of an attribute in the table" (i.e., receiving a query producing a multi level aggregation table set; col. 4, lines 34-37), "the query to specify group-by operations on plural grouping sets" (i.e., query using the group-by 'product and category name (sets)'; see col. 5, lines 5-15 and table 2);

"in processing the query" (i.e., executing (processing) query; see col. 7, line16), and

"use the intermediate values in the intermediate spool for computing results of at least two group-by operations on" (In light the specification at page 5, paragraph [0018], the purpose of use the intermediate spool, which corresponds intermediate table (output table) is disclosed by Reiter col. 5, lines 36-37) "at least two corresponding grouping sets" (i.e., grouping (aggregating) column; col. 5, lines 30-31) and "a second grouping set" (i.e., grouping (aggregating) rows; col. 5, line 37).

Reiter fails to explicitly disclose compute intermediate values for storage in an intermediate spool (table). However, APA discloses a system for computing

Art Unit: 2162

intermediate values for storage in an intermediate spool (table) (see APA page 3, paragraph [0006]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the system of Reiter by computing intermediate values for storage in an intermediate spool\_ (table) as disclosed by APA (see APA, page 3, paragraph [0006], line 1). Such a modification would allow the method of Reiter to provide table sets in response to a multiple level aggregation query (see Reiter col. 2, lines 60-62), therefore, improving the accuracy of the computing aggregates on distinct attribute values.

As per claim 16, Reiter discloses "wherein the query comprises a Structure Query Language (SQL) SELECT statement containing a GROUP BY clause specifying multiple grouping sets" (i.e., SQL query containing GROUP BY and SELECT statement; see col. 5, lines 5-15 and table 2).

As per claim 17, Reiter discloses "the query specifies group-by operations on plural grouping sets at multiple grouping levels" (i.e., group-by operation and product name level (1) and category name level (2); see table 2, lines 6-7).

Art Unit: 2162

As per claim 18, in addition to claim 8, Reiter further discloses "database management software executable on the at least one processor to perform the receiving, computing, and using acts" (i.e., memory comprising an engine and a cpu for executing programs; see col. 4, lines 22-26 and Fig. 1).

As per claim 19, in addition to claim 18, Reiter further discloses "the storage comprises plural storage modules accessible by the plural access modules in parallel" (i.e., database system comprising two components functioning in parallel, database engine for storing and database front-end for sending commands to the engine; see col. 1, lines 63-67).

As per claim 20, Reiter further discloses "the access modules executable on the processors" (i.e., database system comprising two components, database engine for storing, manipulating (processing) and database front-end (processor) for sending commands to the engine; see col. 1, lines 63-67).

#### ***Allowable Subject Matter***

As per claims 4-7 and 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2162

### **(10) Response to Argument**

The Examiner will address the arguments in the order submitted by the appellants.

#### **Argument:**

On page 5, section 1, paragraph 1, appellant argues that "Independent claim 1 was rejected as being obvious over Reiter and alleged Admitted Prior Art ("APA"). It is respectfully submitted that the Examiner has failed to establish a prima facie case of obviousness. See *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (holding that the Pro has the burden in § 103 to establish a prima facie case of obviousness, and that this burden can be satisfied only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references)".

#### **Response:**

It is noted, that Reiter discloses most database systems store data in tables. A table is a series of rows, also called records. Each row contains data. The rows are divided into columns. The intersection of a row and column is referred to as a field. Each column specifies a particular type of data that is contained in each field of the column. Each field contains the data of the particular type for the intersecting row and column; see col. 1, lines 10-22.

Art Unit: 2162

Accordingly, the APA discloses a database, collection of logically related data arranged in a predetermined format, such as in tables that contain rows and columns. To access the content of a table in the database, queries according to a standard database query language. A query can be issued to insert new entries into a table of a database, modify the content of the table, or to delete entries from the table; see the specification, page 2, paragraph 0001.

Further, in page 3, paragraph 0005, APA discloses the group-by on the grouping set C1, C2 is calculated from the base table, the group-by on C1 can be calculated from the result of the group-by on C1, C2, rather than from the base table. The *prima facie* case of obviousness has been established.

Argument:

On page 5, section 1, paragraph 2, appellant argues that "The objective teachings of the references cited by the Examiner clearly indicate that the claimed subject matter is non-obvious. To make a determination under 35 U.S.C. § 103, several basic factual inquiries must be performed. See *Graham v. John Deere Co.*, 383 U.S. 1. 17, 148 U.S.P.Q. 459 (1965). Two of the basic factual inquires include: (1) determining the scope and content of the prior art; and (2) ascertaining the differences between the prior art and the claims at issue."

Art Unit: 2162

Response:

In response to appellant's argument that "the claimed subject matter is non-obvious. To make a determination under 35 U.S.C. § 103, several basic factual inquiries must be performed" the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Thus, Reiter fails to explicitly disclose storing the distinct values of the at least one attribute in a first table. However, APA discloses a method for storing the distinct values of the at least one attribute in a first table (see APA page 3, paragraph [0006], line 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Reiter by storing the distinct values of the at least one attribute in a first table as disclosed by APA (see APA, page 3, paragraph [0006], line 1). Such a modification would allow the method of Reiter to provide table sets in response to a multiple level aggregation query (see Reiter col. 2, lines 60-62).

Art Unit: 2162

Argument:

On page 7, paragraph 1, appellant argues, that "This fundamental difference between the teachings of Reiter and the subject matter recited in claim 1 strongly indicates that the hypothetical combination of Reiter and APA clearly does not teach or hint at elements of claim 1."

Response:

In response to appellant's argument that "hypothetical combination of Reiter and APA clearly does not teach or hint at elements of claim 1." The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, APA discloses a database, collection of logically related data arranged in a predetermined format, such as in tables that contain rows and columns; see the specification, page 2, paragraph 0001. Further, in page 3, paragraph 0006, APA discloses a method for storing the distinct values of the at least one attribute in a first table.

Reiter discloses most database systems store data in tables. A table is a series of rows, also called records. Each row contains data. The rows are divided into

Art Unit: 2162

columns. The intersection of a row and column is referred to as a field; see col. 1, lines 10-22.

Further, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Therefore, the combination of the prior art discloses the claimed limitations.

Argument:

On page 7, last paragraph, appellant argues that "the Examiner did not address Appellant's arguments that the APA actually teaches away from the claimed invention."

Response:

In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Therefore, Reiter discloses most database systems store data in tables. A table is a series of rows, also called records. Each row contains data. The rows are divided

Art Unit: 2162

into columns. The intersection of a row and column is referred to as a field; see col. 1, lines 10-22.

APA disclose a database, collection of logically related data arranged in a predetermined format, such as in tables that contain rows and columns; see the specification, page 2, paragraph 0001. Further, in page 3, paragraph 0006, APA discloses a method for storing the distinct values of the at least one attribute in a first table. Thus, the arguments are not persuasive.

MPEP 2111: During patent examination, the pending claims must be "given the broadest reasonable interpretation consistent with the specification" Applicant always has the opportunity to amend the claims during prosecussion and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). The court found that applicant was advocating ... the impermissible importation of subject matter from the specification into the claim. See also In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) (The court held that the PTO is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the "PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definition or otherwise that may be afforded by the written description contained in application's specification.").

The broadest reasonable interpretation of the claims must also be consistent with

Art Unit: 2162

the interpretation that those skilled in the art would reach. In re Cortright, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999).

**(11) Related Proceeding(s) Appendix**

Copies of the court or Board decision(s) identified in the Related Appeals and Interferences section of this examiner's answer are provided herein.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section (9) above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte dismissal of the appeal* as to the claims subject to the new ground of rejection:

**(1) Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

**(2) Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR

Art Unit: 2162

41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Art Unit: 2162

Respectfully submitted,

/JEAN B. FLEURANTIN/

Primary Examiner, Art Unit 2162

**A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:**

J-21  
3-31-08

Conferees:

John E. Breene (Supervisory Patent Examiner 2100)

  
JOHN BREENE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

Ali Mohammad (Supervisory Patent Examiner 2100)

  
MOHAMMAD ALI  
SUPERVISORY PATENT EXAMINER

March 27, 2008

Dan C. Hu

TROP, PRUNER & HU, PC..

1616 South Voss Road, Suite 750

Houston, TX 77057-8880